REMARKS

Reconsideration of this application is respectfully requested. Claims 1, 4-5, 8,10-12,14,17-18 have been amended. Please add new claims 21-23. No new matter has been added. Claims 1-20 remain pending.

Specification

In the Office Action, the title was objected to as not being descriptive. A new title which is more descriptive of one embodiment of the invention has been provided to overcome this rejection.

The abstract of the disclosure was also objected to because "it uses legal phraseology ('comprise')" prohibited by MPEP § 608.01(b). The abstract has been amended to comply more precisely with MPEP § 608.01(b).

The absence of a "Summary of the Invention" section was objected to. The Office Action requested that Applicants add a "Summary of the Invention" description to the application. However, Applicants would like to kindly point out that both the M.P.E.P. and 37 C.F.R. §1.73 do not require the presence of a "Summary of the Invention" in a patent application. They merely indicate where in the application the "Summary of the Invention" should be placed if Applicants were to elect to include one.

In particular, 37 C.F.R. §1.73 only states that "[a] brief summary of the invention ... should precede the detailed description." 37 CFR § 1.73 does not state "must" or "shall." Accordingly, Applicants have elected not to include a "Summary of the Invention" as this is within the discretion of Applicants.

Drawings

In the Office Action, Figure 1 was objected to because it was not designated as "prior art" as required by MPEP § 608.02(g). An amended version of Figure 1 provided with this response includes the "prior art" designation.

In addition, the drawings were objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character 230 was used to designate both the execution unit and the I/O interface (Figure 2); and because reference character 250 was used to designate both a register file and the second I/O bus (Figure 2). Figure 2 and the specification have been amended to comply with 37 CFR 1.84(p)(4). A clean version of Figure 2 has been enclosed. New reference character 231 now designates the first I/O interface and new reference character 251 now designates the second I/O bus.

Claim Objection

Claim 10 was objected to because it used the word "computing" instead of the word "calculating" and was therefore inconsistent with Claim 8 from which it depends. Claim 10 has been amended as suggested by the Examiner to comply with the language of Claim 8.

35 U.S.C. § 102 and Sec. 103 Rejections

Claims 1-4, 8-11, and 14-17 are rejected under 35 U.S.C. 102(b) as being anticipated by Austin, U.S. Patent No. 3,163,850 (hereinafter "Austin"); and Claims 5,7,12,13,18 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Austin. For the following reasons, Applicants respectfully submit that all pending claims are allowable over Austin.

Austin describes a data processor which is capable of processing a gather instruction and a scatter instruction. The format used for the gather instruction, referred to as a Record Scatter variable ("RSV") instruction, is set forth at column 2, line 67 ("RSV Instruction RSV 0079 3011"). The data processor described in Austin includes dedicated address calculation hardware for processing the RSV instruction. For example, as described at column 5, lines 49-69, when an RSV instruction is encountered during the course of a program routine . . .

> It is fed along Information bus 15 into Program register 24 in the same manner as preceding instruction words. Immediately, the O*p* portion positions sign, 0 and 1, are interpreted by Operation Matrix 33 to initiate the RSV operation.

A musical chairs situation arises as address information is rearranged for the execution of the RSV instruction.
The result of the rearrangement is this:

The single block address is in Address register 29.

The address of the second RDW is in the Address Control register 92.

The first RDW is in the Record Definition register 51.

The RSV execution follows:

Read out data word from address specified by Address register 29 to the Arithmetic register 104. One-up Address register 29. Store data word (Arithmetic register) in working address per Start register 52. Increase working address by variable increment (Variable Increment register 101) and compare with Stop address (Stop register 53).

Thus, Austin describes a processor for processing gather and scatter instructions in an analogous manner to the CRAY-1 vector processor described in the background section of the present application, i.e., using dedicated registers to hold index vectors and dedicated address calculation hardware.

By contrast, Claim 1 recites a method for performing a gather operation which does not require dedicated hardware. Rather, in Claim 1, the gather operation is performed via a plurality of individual instructions. More specifically, to "gather" the data elements stored in memory, each instruction deposits one or more of the data elements contiguously with other data elements within a storage location. Similarly, Claim 14 claims a computer system capable of performing a gather operation using a plurality of instructions rather than dedicated address generation hardware.

In addition, in contrast to Austin, Claim 8 recites a method for performing a scatter operation using a plurality of instructions. Specifically, Claim 8 now recites "executing a plurality of instructions, each of said instructions extracting one or more . . . data elements from a storage location in which said data elements are

stored contiguously; and storing said data elements to said addresses in memory."

In sum, Austin does not disclose any mechanism for performing a gather or scatter operation as recited in Claims 1, 8 and 14. Rather, Austin describes using dedicated registers and address calculation hardware to execute each gather and scatter instruction.

Accordingly, Applicants respectfully submit that Claims 1, 8 and 14 and all claims which depend from Claims 1, 8 and 14, including new dependent claims 21-23, are in condition for allowance.

CONCLUSION

If there are any additional charges, please charge Deposit Account No. 02-2666. If a telephone interview would in any way expedite the prosecution of this application, the Examiner is invited to contact Thomas Webster at (408) 720-8300.

Respectfully submitted,
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